

XV. *Some new forms of Parnassius* (Lepidoptera Rhopalocera). By A. AVINOFF, F.E.S.

[Read October 6th, 1915.]

PLATES LII-LIV.

IN 1914 I wrote an extensive article with descriptions of some new species and forms of the genus *Parnassius* from Northern India and Tibet. I made a comparative study of their relationship with other allied forms, and endeavoured to give a monographical synopsis of the groups in question.

This paper was sent to the Entomological Society of London at the end of July 1914, and crossed Germany on its way to England just at the moment when the war broke out. Now, as the manuscript has thus been lost and I have not reserved a copy, I am obliged to give but short descriptions; and at the present time I am at my duties, far away from my collection. All the necessary bibliography is inaccessible, so that I am compelled to publish merely preliminary notes just to fix the new forms of this interesting genus, postponing their more ample study to some future date. I hope that the photographic illustrations of all the described forms will support the insufficient descriptions, and will guarantee the correct identification.

***Parnassius hunnyngtoni***, sp. nov. (Plate LII, figs. 1, ♂; 2, 3, ♀.)

I received this wonderful new species through the kindness of Mr. Hunnyngton, in honour of whom I have named this minute *Parnassius*. It comes from high elevations near the Chumbi Valley, South Tibet.

Apparently this new species belongs to the *acco*-group, as may be seen by the corneous bag of the female and the characteristic white scaled veins of the slightly pinkish surface of the underside of the secondaries. Their pattern is very peculiar here, as seen by the figure. Especially conspicuous is the curved band of markings in the wing of the female. In the male this curved band of

TRANS. ENT. SOC. LOND. 1915.—PARTS III, IV. (JUNE)

markings on the underside is incomplete. It is especially the three patches in the interspaces 2-5 and on that are marked the red scales lacking entirely on this species in both sexes on both surfaces. The inner outline of the basal dark part runs parallel to the inner margin. A dark crescent in the cell seems to be formed by modified black outlines of the obliterated basal and anal red eyelets. The latter row of dark lunulae is similar to these markings of *acco*.

The comparison of the dark basal area of *hunningtoni* and *acco* shows the former is very different, as in the latter species this area has an irregular contour near the central cell.

The upperside of the male presents a very strong reduction of dark markings compared with *acco*. There are three dark markings in the discocellular, and merely rudiments of the semi-transparent fuscous bands at the costal margin. The hindwing has no central markings at all, the whole pattern consisting of the submarginal lunulae on the black basal area. The markings in interspaces 5 and 7 are slightly seen on the upper surface, due to the transparency of the wing.

The female has more developed dark markings. The two dark patches of the secondaries corresponding to the usual red eyelets are not large and stripe-like. The markings between them forming an uninterrupted curved band are seen only by transmitted light.

The size of this species hardly reaches that of the smaller *simo* forms. The cilia are very long and of the whitish ground-colour of the wings.

The antennae are yellowish grey, gradually darkening at the extremity. The legs are pinkish. The corneous pouch of the female, being of the general shape and formation of that of *acco*, is comparatively shorter and does not reach so far in surrounding the upper part of the body.

***Parnassius acco***, Gray, subsp. ***hampsoni***, nov. (Plate LII, fig. 4.)

The genuine *acco* is rather a larger butterfly with heavy dark markings and well-developed red ocelli. So are the *acco* caught during my expedition through Central Asia in 1912,\* in Eastern Ladak and Rupshu. The Kara-Korum form is smaller, the markings are less heavy, especially the antemarginal lunulae of the secondaries are reduced in

\* I have had the honour of making a report of this expedition, on Feb. 5th, 1913, at the meeting of the Entomological Society, vide Proceedings, 1913, pp. xi, xii.

size. The ocelli of the secondaries are of a very pale pinkish tinge. This northern form, modified in the opposite direction, as compared with the type from *przevalskyi*, Alph., *baileyi*, South, and *gemmaifer*, Fruhst., has full right to receive a special name. I dedicate it to the eminent British entomologist Sir George Hampson.

***Parnassius maharaja***, sp. nov. (Plate LIV, figs. 1, ♂; 2, ♀.)

The correct position in the genus of this new species is rather doubtful. The pouch of the female shows, however, that it has close affinity with *Parnassius cephalus*, Gr.-Gr., and *szechenyi*, Friv.

The male is white, with a fuscous marginal band and a row of dark submarginal lunulae on the primaries. Between this row and the discocellular is a grey shade at the costal margin. The two black markings of the dark discocellular are well developed. A grey patch in the middle of interspace 1 near the inner margin is indistinct. The secondaries have a dark marginal band and a row of evanescent dark markings. Instead of the ocelli there is a minute dark marking in the interspace 5 and a larger one on the costal margin. In the same interspace 7 there is another dark marking between the ocellus and the basis of the wing—a character typical for *acco*, *szechenyi*, *simo* and *charltonius*.

The female has better-developed dark markings, especially on the secondaries, where a complete row of antemarginal markings is present, the two subanal spots being heavier and of a somewhat triangular shape. The discal ocelli are larger, though of a diffuse fuscous colouring, with some pale reddish scales in the upper one.

The cilia of both sexes are black, as in *simo*.

The ground-colouring of the underside of the hindwing, as well as of the apex of the primaries is of the same reddish tinge as in *acco-przevalskyi*. There are no white scales along the veinings as in the latter conspecifics. The legs are slightly pinkish. The size of this species is that of large *delphioides* forms; the pointed and extended shape of the forewings is very much that of a gigantic *simo*.

Caught on desolate stony slopes near the crest of the Tagalang-la Pass (Rupshu), 18,000 feet, and in the vicinity of Sugetdavan (Chinese Turkestan). I have unmistakably seen a specimen on the Dapsang plateau, 17,000 feet, in the Karakoram region, but could not catch the butterfly.

TRANS. ENT. SOC. LOND. 1915.—PARTS III, IV. (JUNE) A A

**Parnassius acdestis**, Gr.-Gr., subsp. **rupshuana**, nov.  
(Plate LII, fig. 5, ♂; 6, ♀.)

Differs from the type forms especially by the position of the antemarginal markings of the hindwing. These markings are reduced in size, and run further inward at a greater distance from the outer margin. Generally it is only the round black spot in cell 3 that is comparatively conspicuous. It has no blue centre. The next lunule in cell 4 is particularly strongly curved inwardly. The white marginal lunulae of the ground-colouring on the primaries are also removed further from the margin in comparison with *acdestis*. The shape of the primaries is more pointed at the apex, and the secondaries present a slightly pronounced angle in the outline on the outer margin of cell 4.

*Locality.* Rupshu, Tagalang-la, 17,000–18,000 feet, VII.

**Parnassius acdestis**, subsp. **ladakensis**, nov. (Plate LII, fig. 7, ♀.)

This is nearest to the typical race from Kuku-nor. The shape of the wings is rounder than in *rupshuana*. The dark markings of the primaries are not so developed as in the latter form. The chief distinctive character of *ladakensis* and *acdestis* is connected with the position of the antemarginal band of markings on the secondaries, which is just as far removed from the edge in *ladakensis* as it is in *rupshuana*. Judging by my single *ladakensis* female from Shera-la (East Ladak), and comparing it with my ten specimens of *rupshuana*, it may be stated that the marking in cell 3 conforms more, by its shape and size, to the corresponding character of the real *acdestis*. The basal greyish area is somewhat lighter.

I have found it useful to publish the figures of two little-known new *acdestis* forms, described lately by Felix Bryk.

*Parnassius latonius* (Plate LII, fig. 8, ♀), originally described as an independent species, is but a very large and heavily marked form of *acdestis lampidius*, Fruhst., from Sikkin. There is a distinct red basal eyelet on the hindwing. Two specimens of *P. latonius* have been found at Kangma, South Tibet, near Shigatse. One of these specimens I obtained through Bang-Haas in Dresden.

*Parnassius acdestis priamus* (Plate LII, fig. 9, ♂) has been taken in Central Tian Chan near the Musart Pass.

The comparison of the races presented on Plate LII shows clearly the difference in shape of the wings of the various *acdestis* forms. *Priamus* in this respect rather closely resembles the genuine *acdestis*, though the apex of the primaries is more pointed and sharp. The antemarginal markings are very inconspicuous, but run distinctly almost parallel with and close to the margin as in *acdestis*. Besides the type specimens of Bryk, now in my collection and figured on Plate LII, I have two other examples from the vicinity of Hantengri caught on the Russian border. The male has the ocelli more distinctly joined by a bar as in *latonius*, and the female is characterised by an absolute lack of submarginal markings on the secondaries.

The pouches of the females *acdestis*, *rupshuana ladakensis* and *latonius* are identical, the corneous bag of the Tian Shan race being slightly different in structure.

#### ***Parnassius delphius*, Ev.**

I have to add five new local races to the numerous already known ones of this extremely variable Central-Asiatic species.

***Parnassius delphius*, subsp. *nicevillei*, nov.** (Plate LIII, fig. 1, ♂; 2, ♀.)

One may describe this race from Burzil Pass, Kashmir, as an intermediate link connecting the subspecies *atkinsoni* and *stoliczkanus*, though the affinity with the former is much closer. Its size is somewhat smaller than that of *atkinsoni*. The chief difference consists in the reduction of the dark markings, especially in the discal part of the forewing. On the hindwing the central red ocellus is bright and large, surrounded by a very narrow black ring. The upper ocellus in interspace 7 is reduced in size, rarely red-centred and often almost obsolete. These characters of the formation of ocelli on the hindwing recall subsp. *stoliczkanus*. The submarginal row of blue ocelli is in a darker submarginal zone than in *atkinsoni*, the light interspaces being even narrower or entirely obliterated. I have obtained about seventy specimens of this new race, and might say that the described characters are rather constant. There were two conspicuous aberrations which seem to be very instructive from the phylogenetic viewpoint. One of them has not the usual even row of five

blue ocelli, but the middle one is transformed into a lunule, curved inside in the same way as is the case with the Turkestan forms of the species. Another specimen, having the same character of the submarginal markings of the hindwing, presents other peculiarities connecting it in a striking way to *cardinal*, Gr.-Gr., from Bucharâ. All the three red ocelli are well developed, surrounded by heavy black rings and joined by black bars. The dark markings of the primaries are also enlarged. This specimen is decidedly larger in size than any other of my *nicevillei*. Not approving the system of giving special names to accidental aberrations, I find it worth while to make an exception for this interesting case of transition between the Indian and Turkestan groups of *P. delphius*, and confer the name of ab. *cardinalina*, nov. (Plate LIII, fig. 3, ♂) to this butterfly, which can be discriminated from the genuine *cardinal* only by the character of the dark margin in the secondaries, and the absence of white scabs in the red ocelli on the underside.

I am glad to be able to publish a figure of a male specimen of *atkinsoni* (Plate LIII, fig. 4), known only by the two original females. My three specimens from Pir-Panjâl settle completely the question of the two typical specimens in the British Museum, as they were referred both to Darjeeling and Pir-Panjâl. The males agree closely with the description of the females. The red filling of the ocelli is less conspicuous on one of my two males; it is obliterated almost entirely in the upper ocellus, which reminds one very much of subsp. *stenosemus*, Honr.

Lieutenant A. Brownlow, R.A., has had the kindness to transmit to me a fine female of *nicevillei* from Kishtwar Mountains. I have obtained later a male, in very poor condition of preservation, from the vicinity of Zoji-la. Both specimens differ from the typical *nicevillei* by an extreme development of red on the secondaries, and particularly by the thin black encircling of the ocelli. It may be that these characters constitute a true local race.

In the Western Ladak has been found a *delphius* form belonging to the group of *staudingeri*, B. H.—*hunza*, Gr.-Gr. The dark semi-transparent bands of the primaries are shaped as in subsp. *staudingeri*, although they are not so well marked.

The secondaries have two subanal blue-centred ocelli before the margin, the following markings having the



shape of narrow crescents and stripes as in the Turkestan forms. It may be remembered that the two anal markings in *staudingeri* never have blue scales. The general appearance is transparent, more like that of *hunza*. The two discal ocelli of the secondaries are filled with a faint reddish colouring, approaching that of the forms from Central Pamir and Hindukush—*jakobsoni*, Avin., and *hunza*. The main difference of this new Ladak race and *jakobsoni* consists in the characters of the antemarginal markings of the hindwing, the lunule in the interspace 4 being less conspicuously produced inwardly. I call this new race *mamaievi*, from the name of my friend Mr. M. Mamaiff, with whom I made the journey from India to Turkestan (Plate LIII, fig. 5, ♂; 6, ♀).

Near the Saltoro Glacier in Baltistan the expedition of Mrs. F. Bullock-Workman has found a form of *delphius* exhibiting a transition from *mamaievi* to *hunza*. I name it subsp. *workmani* (Plate LIII, fig. 7, ♀). The submarginal markings are distinctly those of *mamaievi*, but very much reduced in size, and transformed into isolated plain dark spots. The upper ocellus of my unique female is black. The discal area of the forewing presents the character of *hunza* in respect of the diffuse dark scaling crossing the wing along the veins in the third interspace.

The Hindukush group of *delphius* races seems to consist as far as known of three races. The two formerly described ones are *hunza* from Beik Pass, and *chitralensis*, Verity, from Chandur. I have these forms in my collection, and notice that the race recently obtained by my friend Mr. A. Smith in the mountains between Kila Drosh and Kafirstan does not belong to either of the two mentioned above. There is no transverse continuous discal band running to the inner margin of the primaries, as is the case in *chitralensis*; on the other hand, the fuscous antemarginal band of the secondaries presents some light interspaces, absent in the true *hunza*. The shape of the hindwing is particularly narrow, with a well-marked angle at vein 6. My two males have heavy anal black markings and dark discal ocelli. The female has merely a few dark scales in the place of the anal patches. The discal ocelli are centred with pale flesh-red.

This new form, which I call subsp. *kafir*, nov. (Plate LIII, fig. 8, ♂; 9, ♀), should be studied with more ample material, which is so hard to obtain from these remote localities.

Subsp. *darvasica*, nov. (Plate LIV, fig. 3, ♀.)

In the mountains of Darvas (Bucharra) Mrs. Hohlbeck has recorded a new form closely allied to *illustris*, Gr.-Gr., from the Transalai Mountains (Turkestan). The chief difference from both of them consists in the hyaline transparency of the wings in *darvasica*, not at all connected with the state of preservation; the reddish pigment in the ocelli is exceedingly light in colour. These characters somewhat recall subsp. *hunza*. The submarginal markings present an intermediate character between subsp. *illustris*, with a generally well-developed row of ocelli and lunulae, and subsp. *kirichenkoi*, Avin., with its complete absence of any such markings.

Subsp. *sobolevskyi*, nov. (Plate LIV, fig. 7, ♂; 5, ♀.)

This butterfly has been caught by the young traveller Mr. J. Sobolevsky in the Kiliang Pass in Chinese Turkestan. This form belongs distinctly to the group *delphiuss-delphiuss*. It should be ranged closely with *iuldussica*, Verity. The row of usual antemarginal markings of the secondaries is removed far inwardly. Narrow white lunulae divide the markings of the internervural spaces 7-6 from the broad fuscous marginal band. The anal markings are plain black, without blue as in the Tian Shan forms. The discal ocelli are small, the central one with diminished red fillings. The basal grey area is dense, and has the shape of that of the *acdestis* forms (comp. with figures 5-9 of Plate LII). The primaries have no special character compared with *iuldussica intermedia*, Ver., and *delphiuss* except the apparently constant development of dark scaling all over the surface of the wings.

**P. simo**, Gray, subsp. *grayi*, nov. (Plate LIV, fig. 6, ♂.)

This is the largest of all the *simo* forms, it stands close to the race *simonius*, Stgr., from which it differs besides the size, by the very heavy submarginal markings of both pairs of wings. The whole dark pattern is well defined on the densely-scaled surface of the wings. This race inhabits the north-western slopes of the Alai Mountains near Jengisbai. My two specimens from this locality are exactly alike. It must be noted that the shape of the wings is just as broad as in the *simonius* race, and has not the acute apex of *simulator*, Stgr., which almost equals



*grayi* in size. The shape of the antemarginal lunulae of the hindwings is also a good distinct character for discriminating both forms. Those of *simulator* are arrow-shaped, those of *grayi* have not the pointed extremity and present an uninterrupted dark band.

***Parnassius charltonius*, Gray, subsp. *vaporosus*, Avin.**  
(Plate LIV, fig. 7, ♂.)

I have described this Darwas form of the glorious North-Indian species from a few females. Now that I have obtained through Mr. A. Hohlbeck a fine series of both sexes, I am able to complete my description, by pointing out the characters of the male. It has very slightly developed submarginal and discal dark bands of the primaries in comparison with the closely allied subsp. *princeps*, Honr. The red-central ocellus of the secondaries presents the same typical character as in the female; it is narrow, elongated in the transverse direction, the inner dark outline forming almost a straight line. The semi-transparent markings near the blue marginal ocelli are somewhat more conspicuous than in *princeps*. This latter character recalls the Indian forms of the species, though *vaporosus* is undoubtedly the lightest form in the whole group of allied local races of *charltonius*.

***Parnassius loxias*, Püng., subsp. *raskemensis*, nov.**  
(Plate LII, fig. 10, ♀.)

The typical form of this fine species, originally known only by three specimens obtained by Püngeles from the Central Tian Chan Mountains, has been lately obtained by me from a collector in the same locality in a large series, showing very fully the limits of variation of *P. loxias*. This rich material enables me to recognise and establish with enough certitude a different, though close local race, from the ramifications of the Raskem Mountains, namely, from the Kiliang Pass, where the butterfly has been recorded by Mr. J. Sobolevsky from a single female, now forming part of my collection. It differs from the Northern Tian Shan type in having reduced hyaline margins of both wings, and in a considerable development of the submarginal markings. This part of the pattern of the forewing presents a heavy fuscous band, especially broad in the interspaces 2-4. The discal zigzag band characteristic of the typical *loxias* is absent. The black submarginal

ocelli of the hindwing are enlarged inwardly, and the blue scaling is reduced. On account of the narrowness of the marginal hyaline band the white interspaces between the latter and the ocelli are quite distinct.

The two usual *Parnassius* ocelli are of a very pale slightly orange tint, and scarcely differ in colour from the ground of the whole surface. The basal part of the wing is extremely dark, which is never the case with the true *loxias*.

***Parnassius epaphus*, Boisd., subsp. *phariensis*, nov.**

(Plate LIV, fig. 8, ♂; 9, ♀.)

Close to *P. epaphus* subsp. *sikkimensis*, Elwes, from which it differs by the excessive development of all the dark markings. The red filling of the ocelli on both pairs of wings is very distinct. The red ocelli of the hindwing are usually joined by a dark bar.

This dark form of *epaphus* inhabits Phari-Zong in Southern Thibet.

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#### EXPLANATION OF PLATES LII—LIV.

[See Explanation facing the PLATES.]